# Kan norsk oppdrettsindustri bidra til Europas rolle som global matprodusent?

TEKMAR 2010 Innovasjon i havbruk
Britannia Hotell, Trondheim
8. desember 2010

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SINTEF Fiskeri og havbruk AS
EATIP

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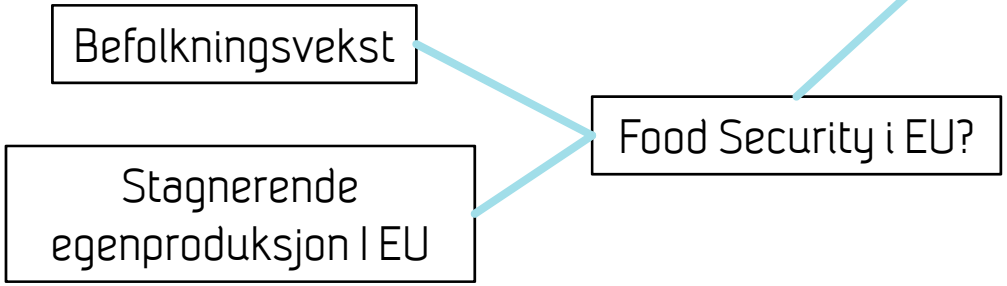
# Kan norsk oppdrettsindustri bidra til Europas rolle som global matprodusent?

- Bakgrunnen for spørsmålet
  - Barosso, 2007
  - Befolkningsvekst
  - Stagnerende EU-produksjon
  - "Europa" = EU
  - Matprodusent = fisk ol

Jeg skal se litt nærmere på disse to

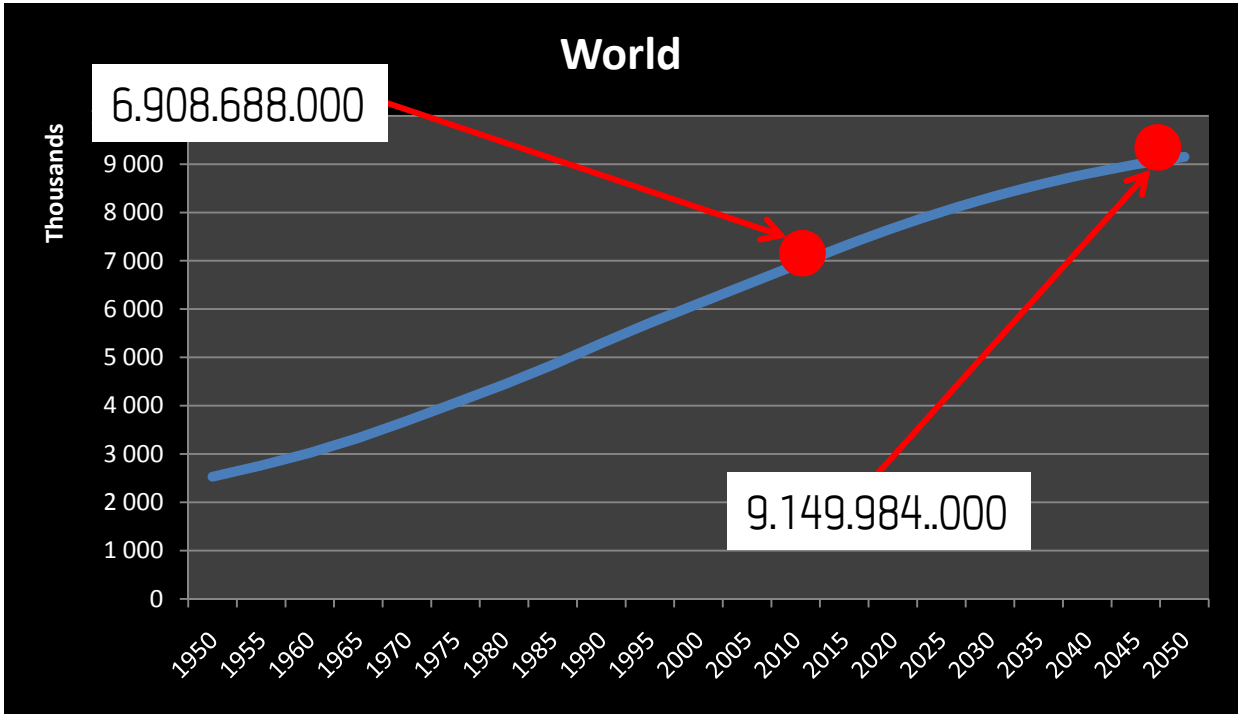
**F-ordene**

- Fish
- Feed
- Food
- Folk and
- the Future



# Fremtiden – verdensbefolkningen

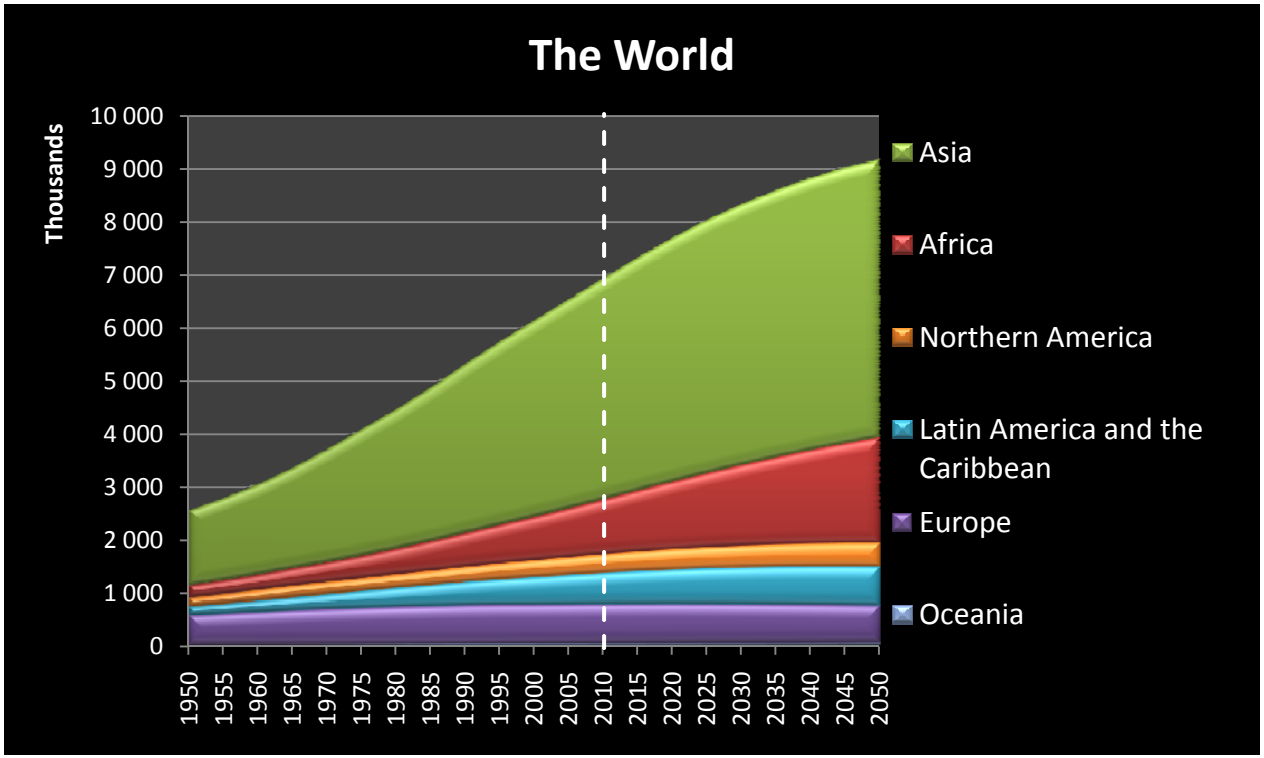
- Innen 2050 verdensbefolkningen anslått til å vokse til 9,1 mrd mennesker (FN, 2010)




*Source*: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*, http://esa.un.org/unpp
Monday, December 06, 2010; 6:22:41 PM.

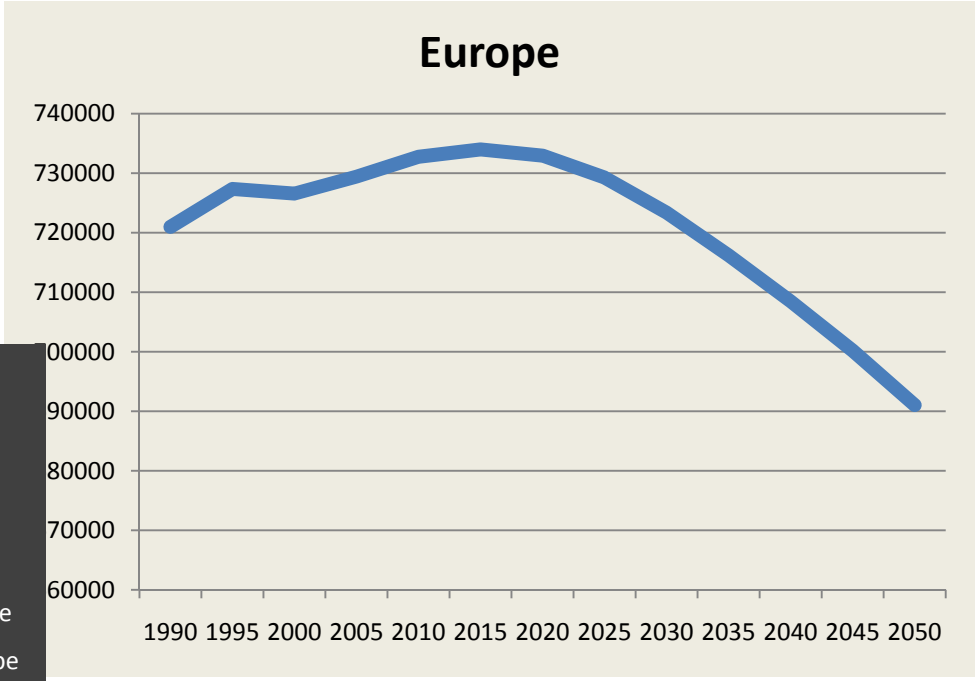
# Imidlertid,

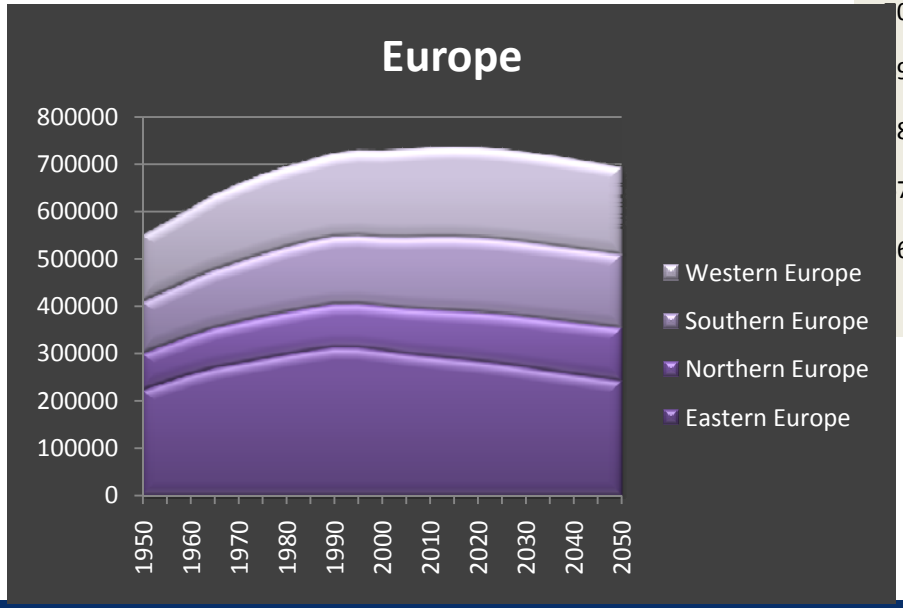
## Befolkningsveksten er skjevfordelt:



# Hva mere er,

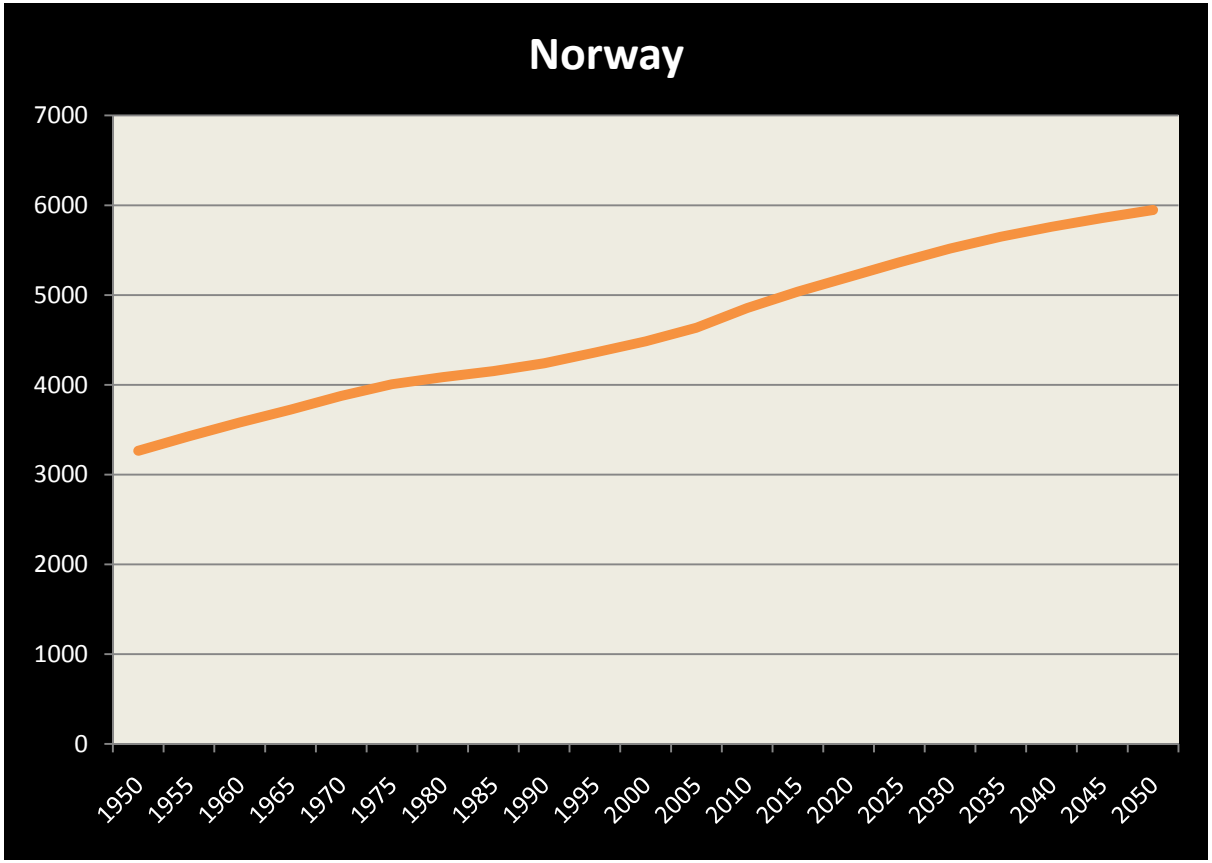
befolkningsveksten i Europa er avtagende fra ca 2020:



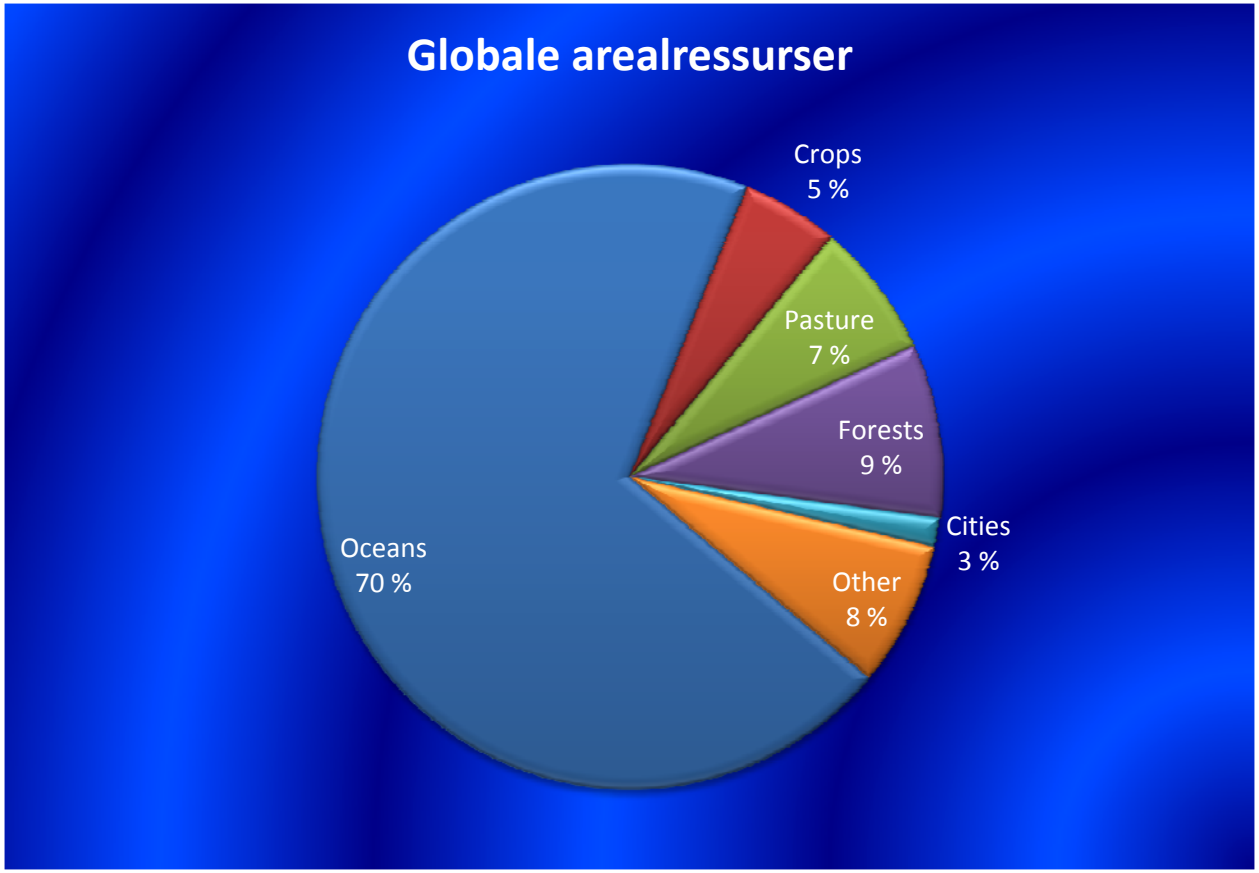
# Og for spesielt interesserte:

## i Norge forventes befolkningen å vokse



# Tilgjengelig mat

- Ressurser for matproduksjon
  - Arealressurser
  - Ferskvann



# Tilgjengelig mat

- Ressurser for matproduksjon
  - Arealressurser
  - Ferskvann

**Ferskvann**

- 2,8 mrd (44%) av verdens befolkning lever i områder med vannmangel
- 67% av tilgjengelig vann brukes i landbruk
- Prognose: innen 2025 vil vannmangel redusere landbruksproduksjon med 30%

Kilde: World Economic Forum World Bank|

# Tilgjengelig mat

- Ressurser for matproduksjon
  - Arealressurser
  - Ferskvann
- Men, problemet er ikke for lite mat I verden; problemet er fordelingen
- I dag sulter 1 milliard mennesker
- Produktivitetsøkninger (pr knapp faktor)

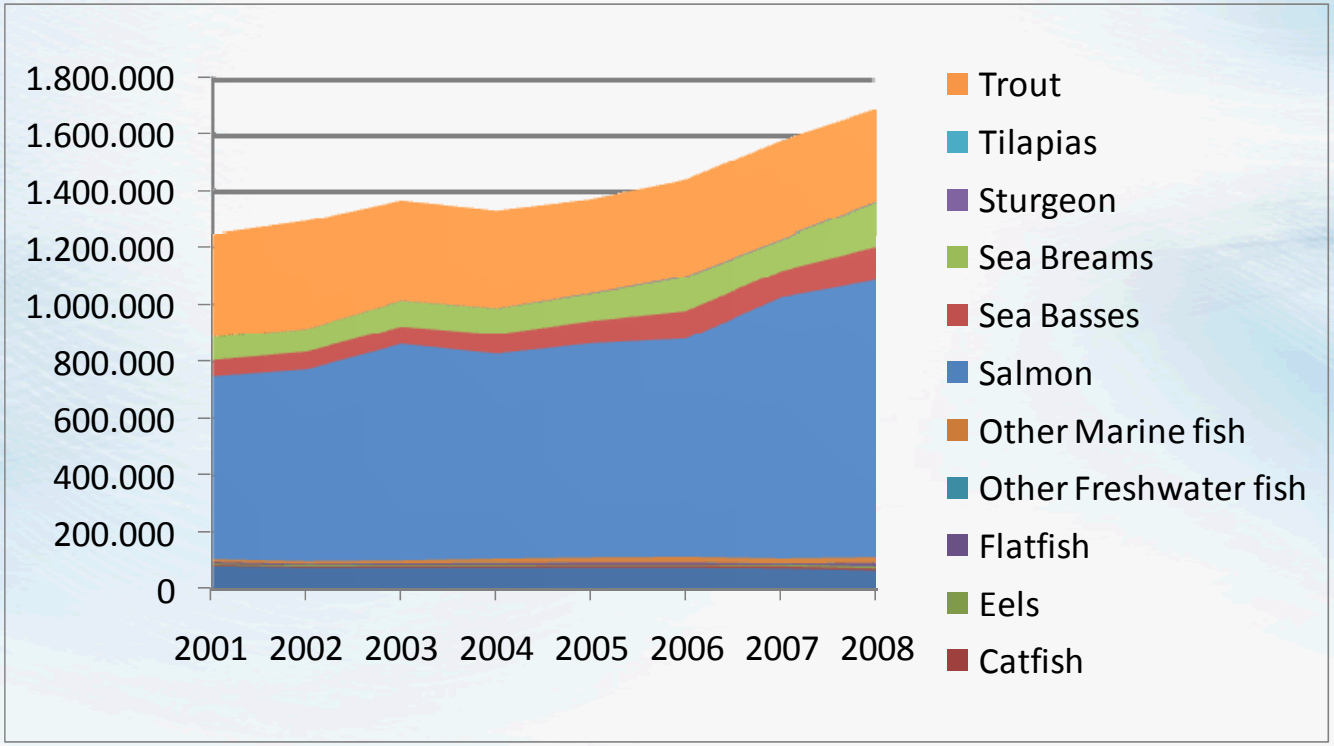
# Stagnating EU Seafood Production

# European fish farming

European Aquaculture
Technology and Innovation Platform

1,240,000 tons

1,680,000 tons




Source: FEAP Member Associations

# EU fish farming

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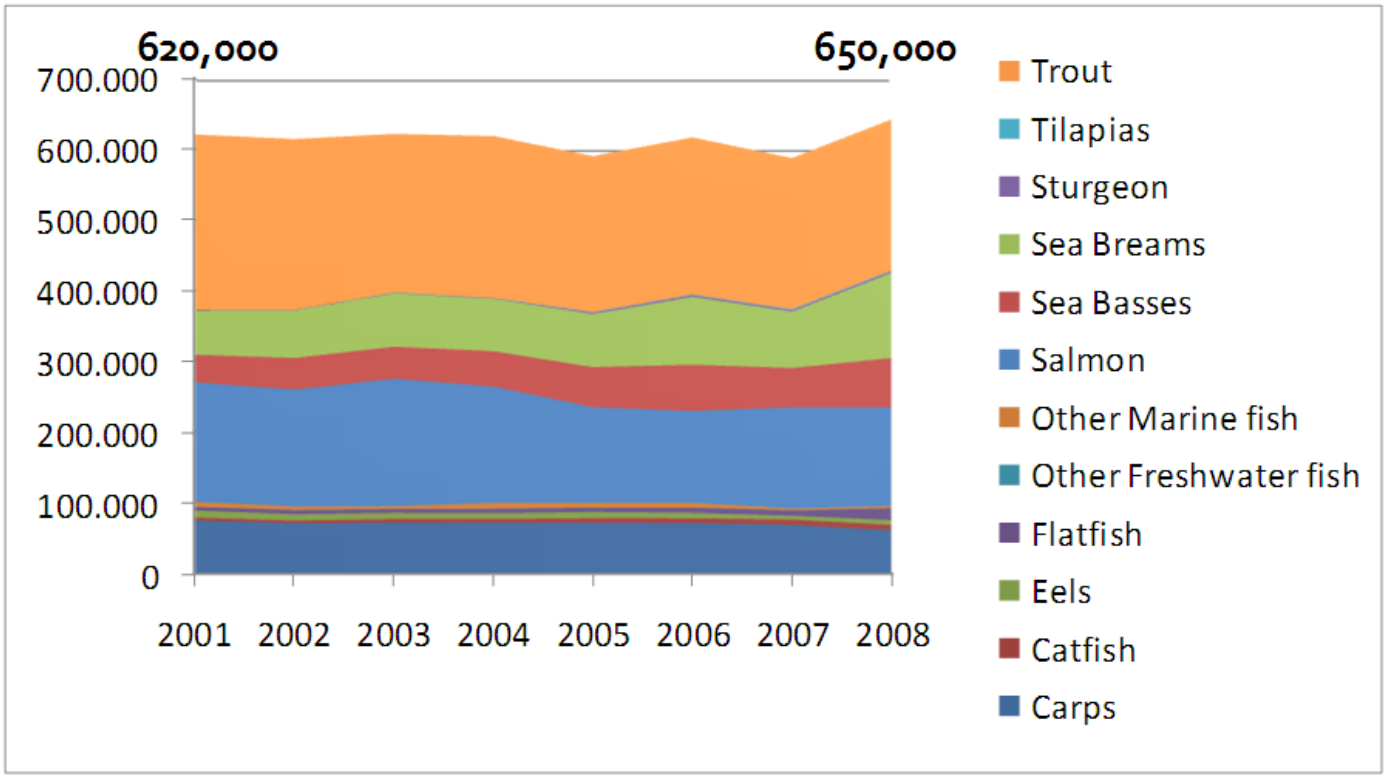


Source: FEAP Member Associations

# Some net differences!

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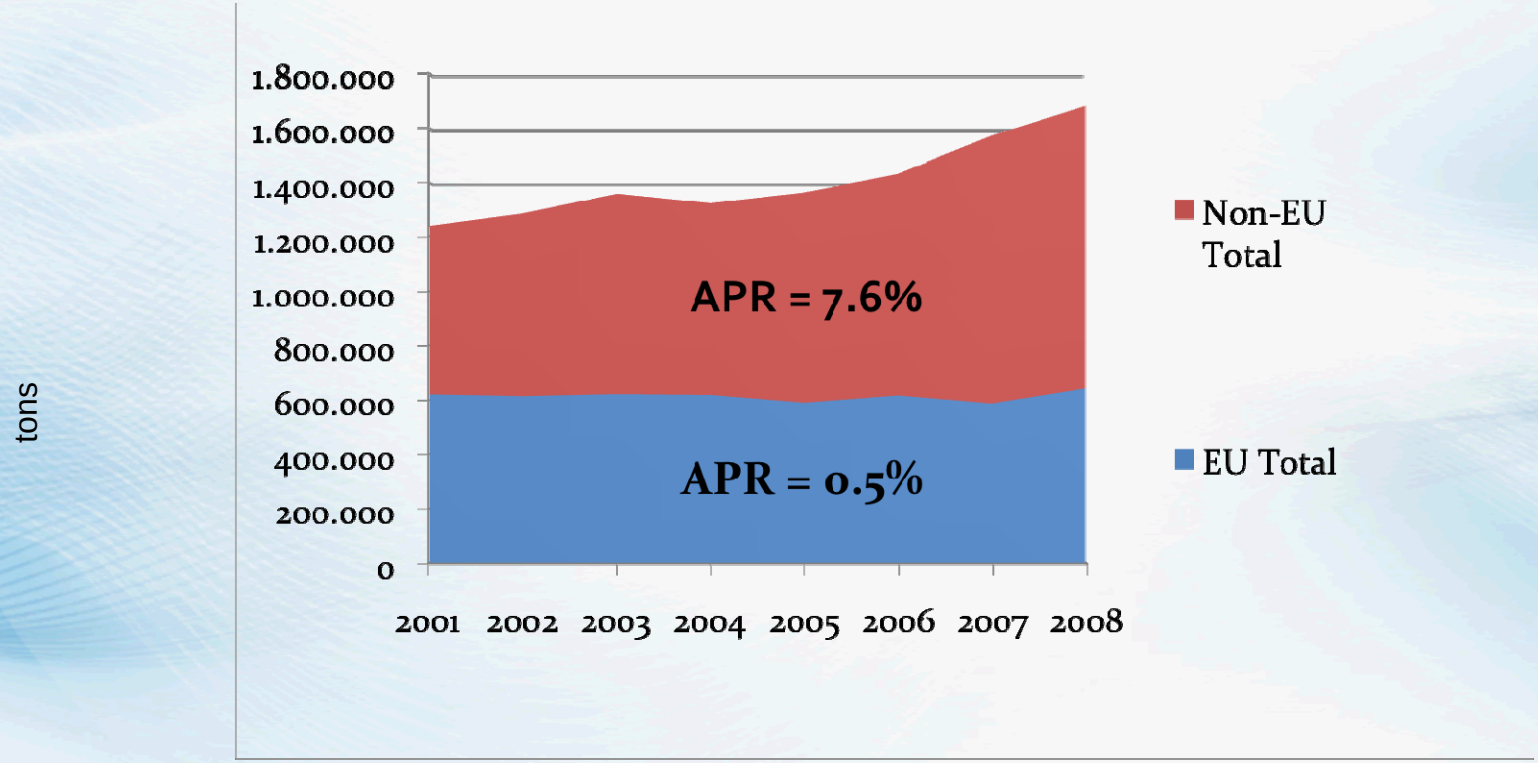


EU Aquaculture strategy (2002) forecast 4% annual growth

Source: FEAP Member Associations

# Total seafood supply in EU

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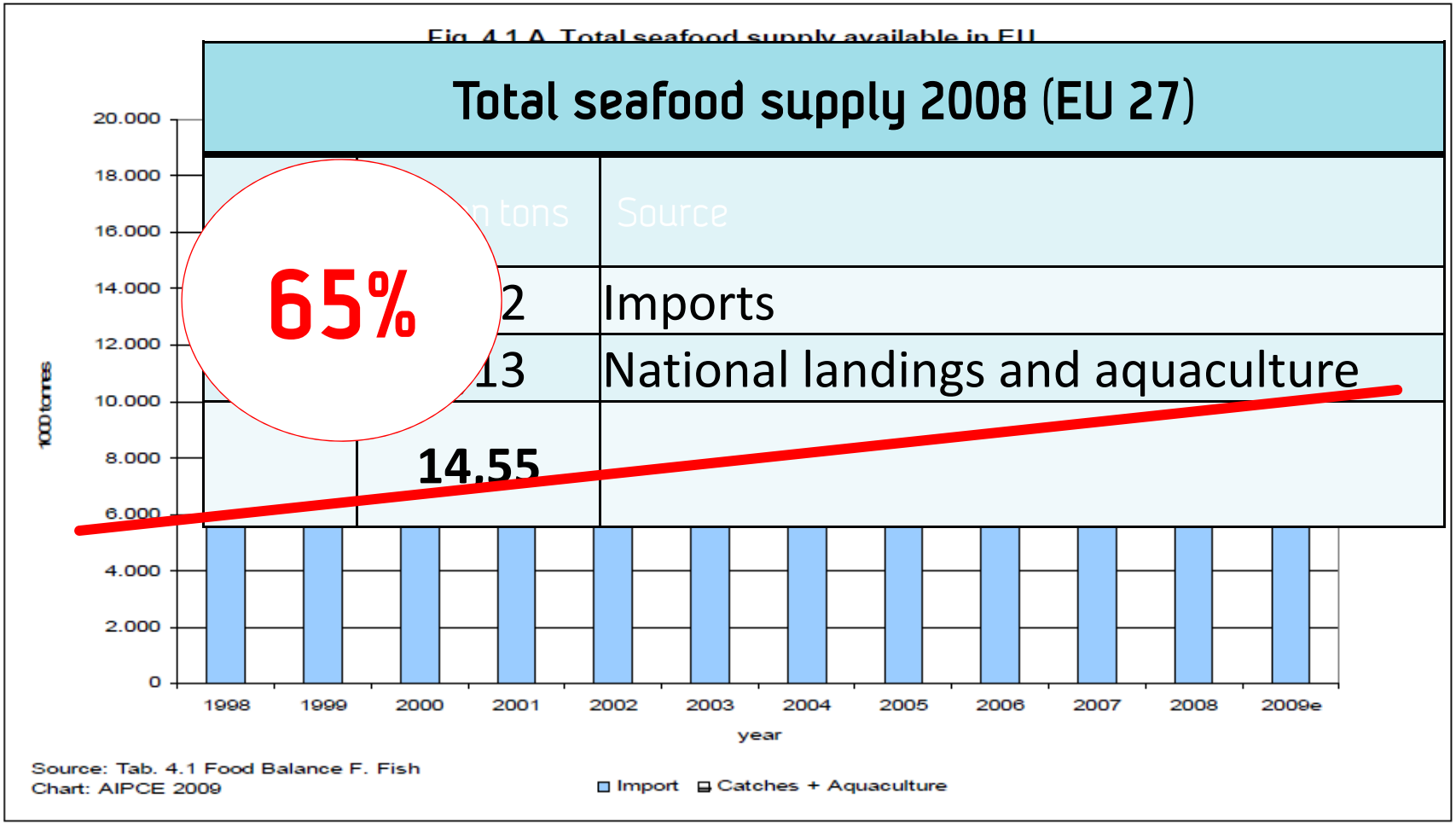
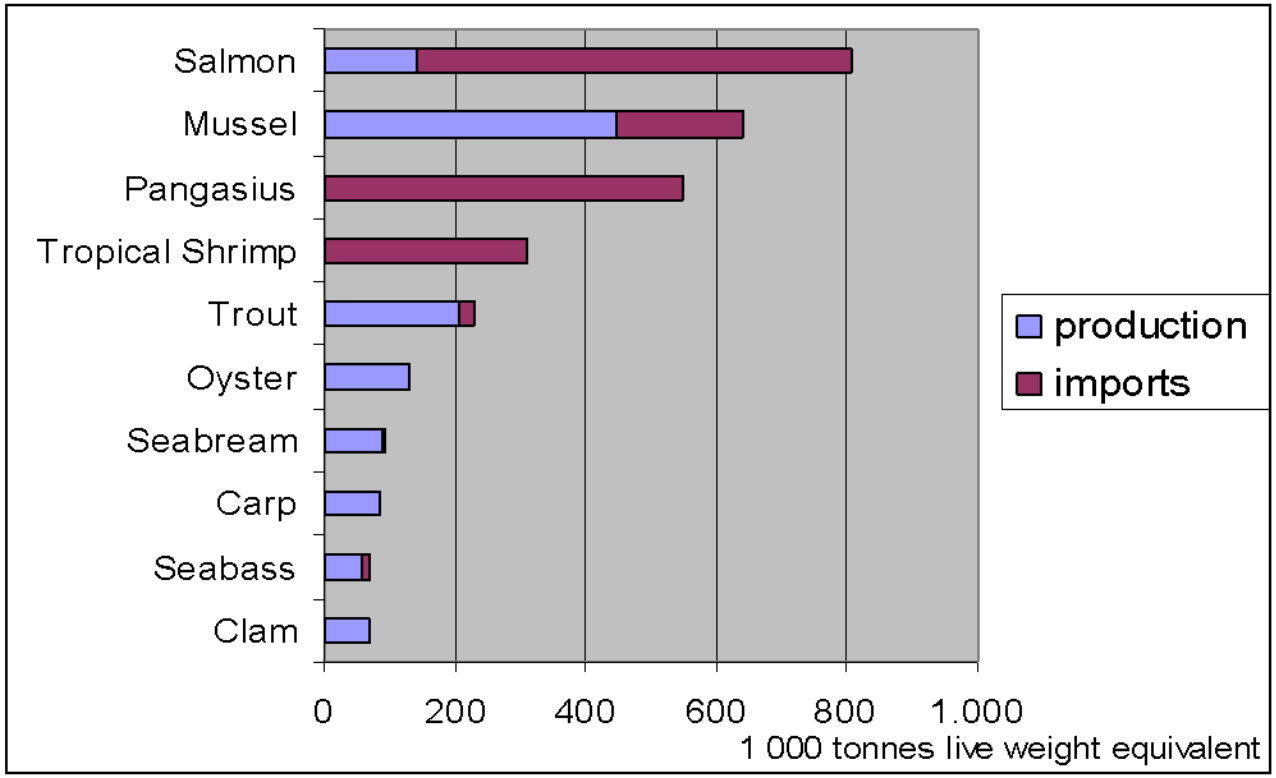


# EU market for aquaculture products (2008)

## Top ten farmed species in EU consumption (in live weight equivalent)




Source: Philippe Paquotte – European Commission, European Parliament Brussels Nov. 2010

# Food Security

# Food security

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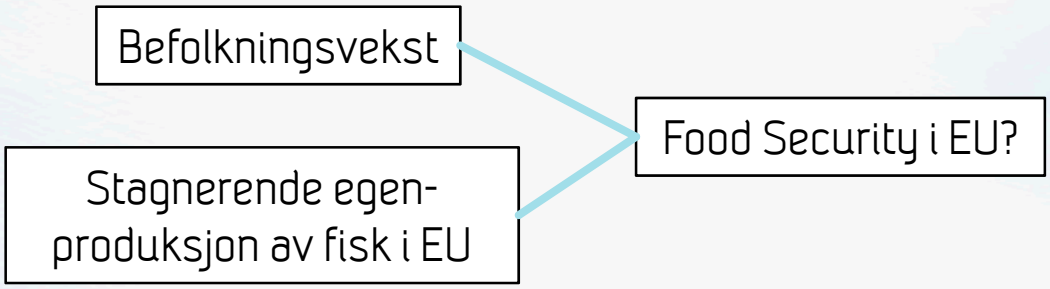
- The World Food Summit of 1996 defined food security as existing

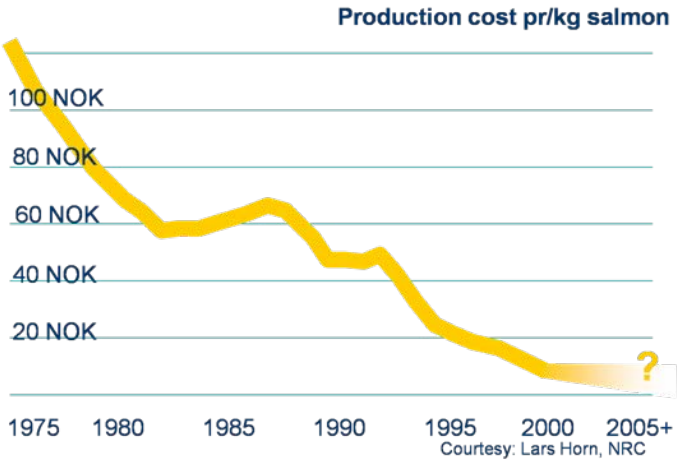
  *"when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".*

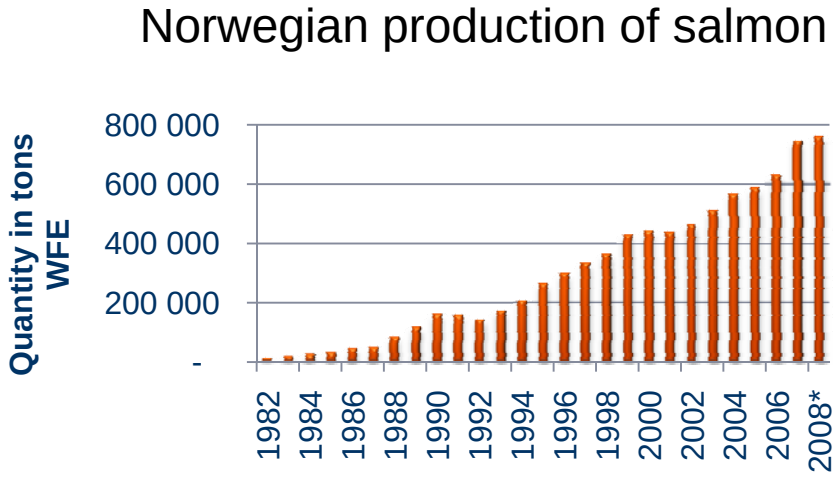
  - Includes both physical and economic access to food that meets people's dietary needs as well as their food preferences.




- *Investeringer i kunnskapsutvikling:*
- *the EU is expected to have enough purchasing power to feed its population*

# Kan norsk oppdrettsindustri bidra til Europas rolle som global matprodusent?




- Ja, men det fordrer:
  - Forskning
  - Innovasjon
  - Finansiering

Teknologiplattformen EATIP

European Aquaculture
Technology and Innovation Platform

# European Aquaculture Technology and Innovation Platform

# From CP via TAs to Deliveries

European Aquaculture
Technology and Innovation Platform

- Establishing a strong relationship between aquaculture and the consumer
- The assurance of a sustainable industry
- Consolidation of the role of aquaculture in society

Core Priorities

Deliverables

Vision → SRA → Implementation Plan

# From CP via TAs to Deliveries

European Aquaculture
Technology and Innovation Platform

- Establishing a strong relationship between aquaculture and the consumer
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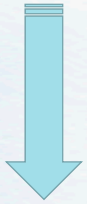
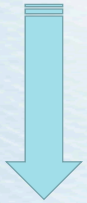
Core Priorities



Process



Deliverables

Vision
Strategic Research Agenda
Implementation Plan

# From CP via TAs to Deliveries

European Aquaculture
Technology and Innovation Platform

- Establishing a strong relationship between aquaculture and the consumer
- The assurance of a sustainable industry
- Consolidation of the role of aquaculture in society

Core Priorities

Thematic Areas

Deliverables

Vision
Strategic Research Agenda
Implementation Plan

Aquaculture and the Consumer

The Assurance of a Sustainable Industry

The Role of Aquaculture in Society

## Thematic Areas

Product quality & human safety and health
Technology and systems (engineering)
Managing the biological lifecycle
Sustainable feed production
Interactions with the environment
Aquatic animal health and welfare
Knowledge management

New: Socio-economics and Management

# Vision documents and SRIAs

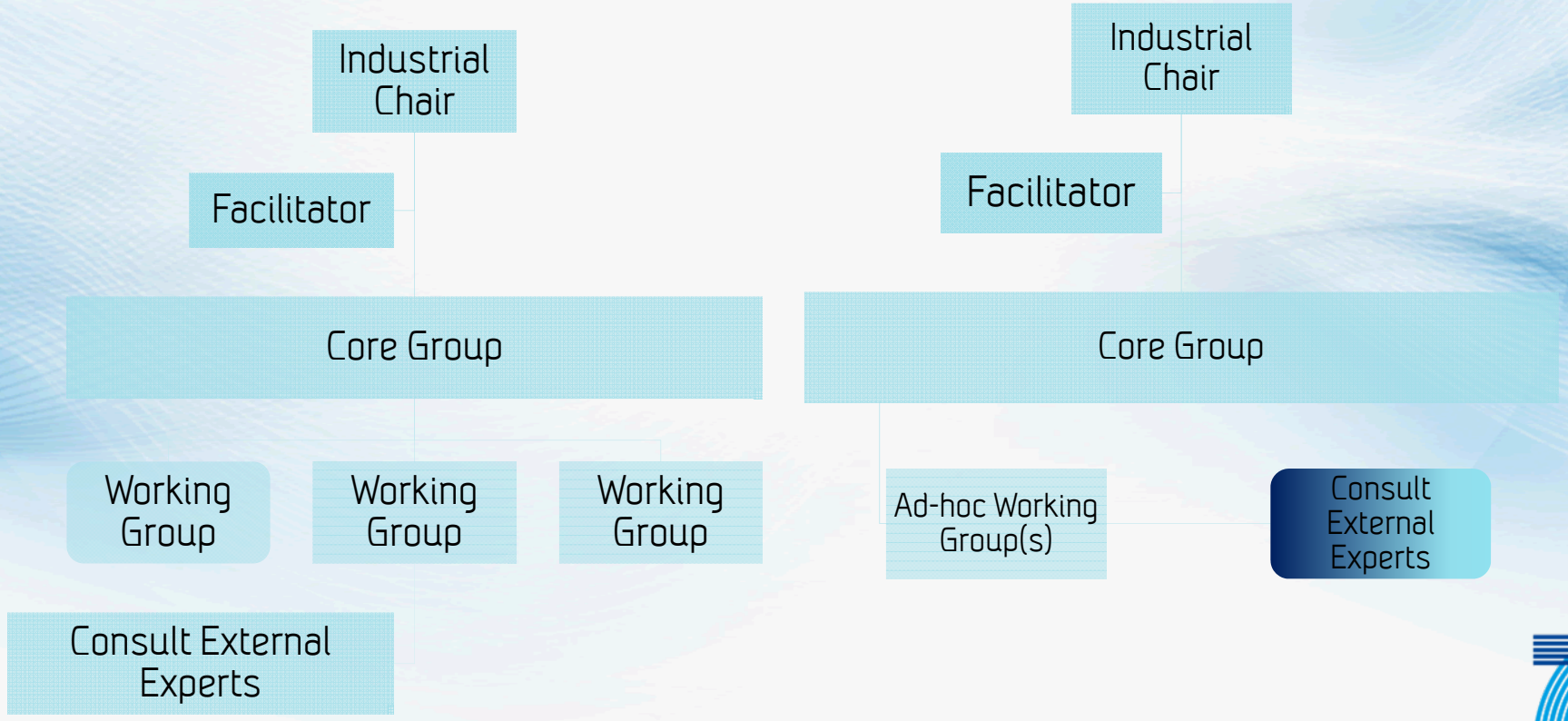
European Aquaculture Technology and Innovation Platform

- The **Vision Documents** provide a consensus view of where the sector should be in 10-20 years time
  - identifying strengths, weaknesses – opportunities, threats and specific knowledge gaps
- The **Strategic Research & Innovation Agendas** should describe **what needs to be done** to respond to the identified goals of the Vision Document

Aquainnova

European Aquaculture Technology and Innovation Platform

# Thematic Area structure (options)




SEVENTH FRAMEWORK PROGRAMME

European Aquaculture
Technology and Innovation Platform

- **Eksempel: TA 2 Technology and systems**

- Kontakt:
  - Jone Gjerde (chair)
  - Laszlo Varadi (facilitator)

# TA 2 Technology and systems

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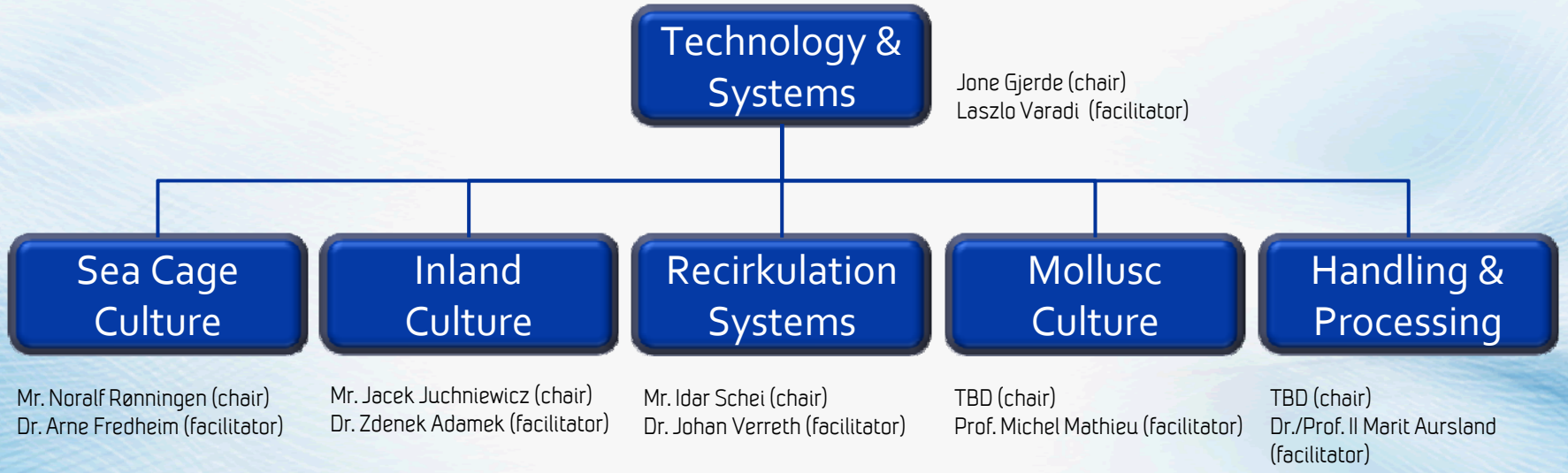
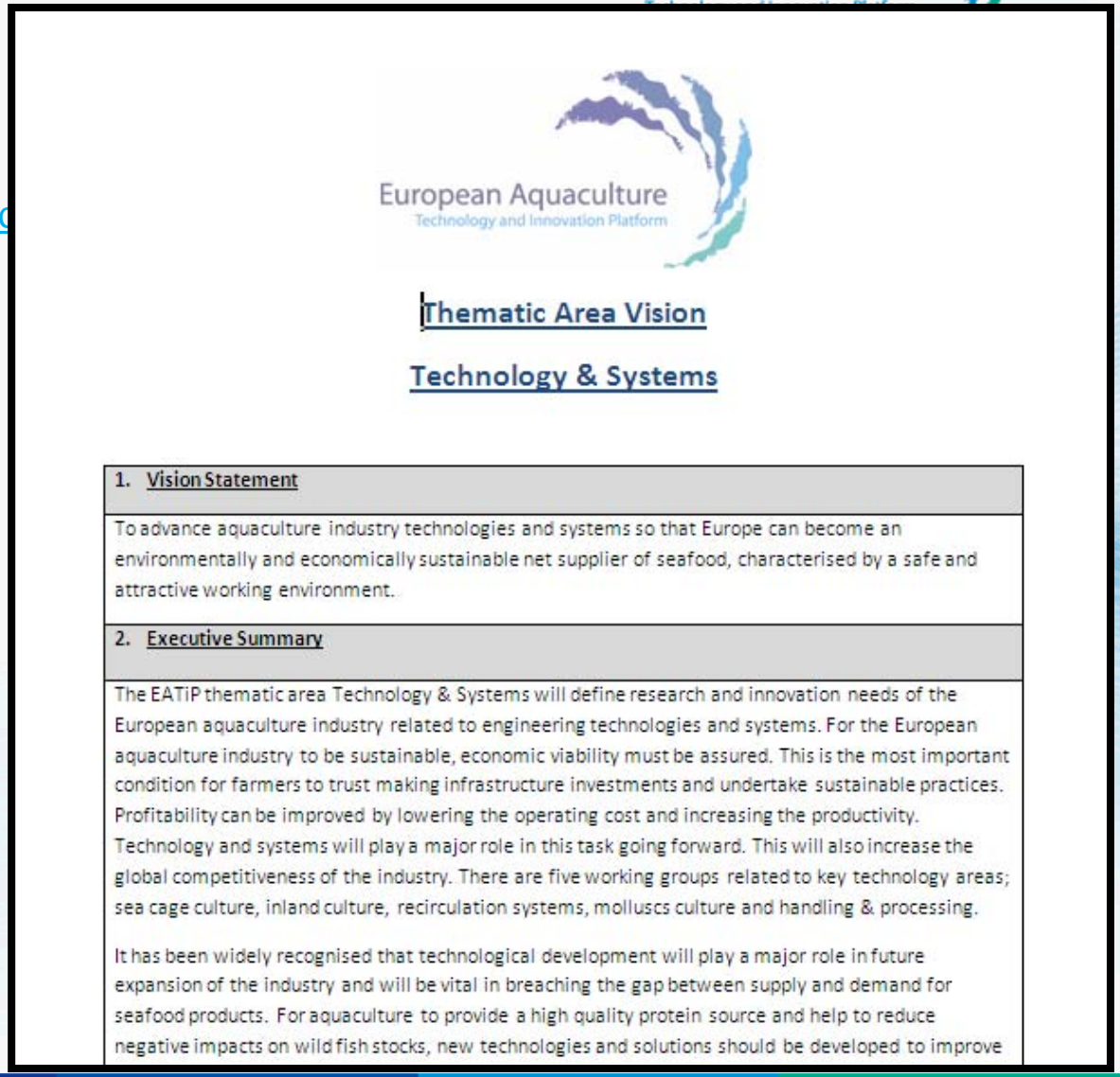


# TA2 Dokumenter

- TA Visjon
  - TA 2 - Vision Statement 201
- TA SRIA



European Aquaculture
Technology and Innovation Platform

**Thematic Area Vision**

**Technology & Systems**

**1. Vision Statement**

To advance aquaculture industry technologies and systems so that Europe can become an environmentally and economically sustainable net supplier of seafood, characterised by a safe and attractive working environment.

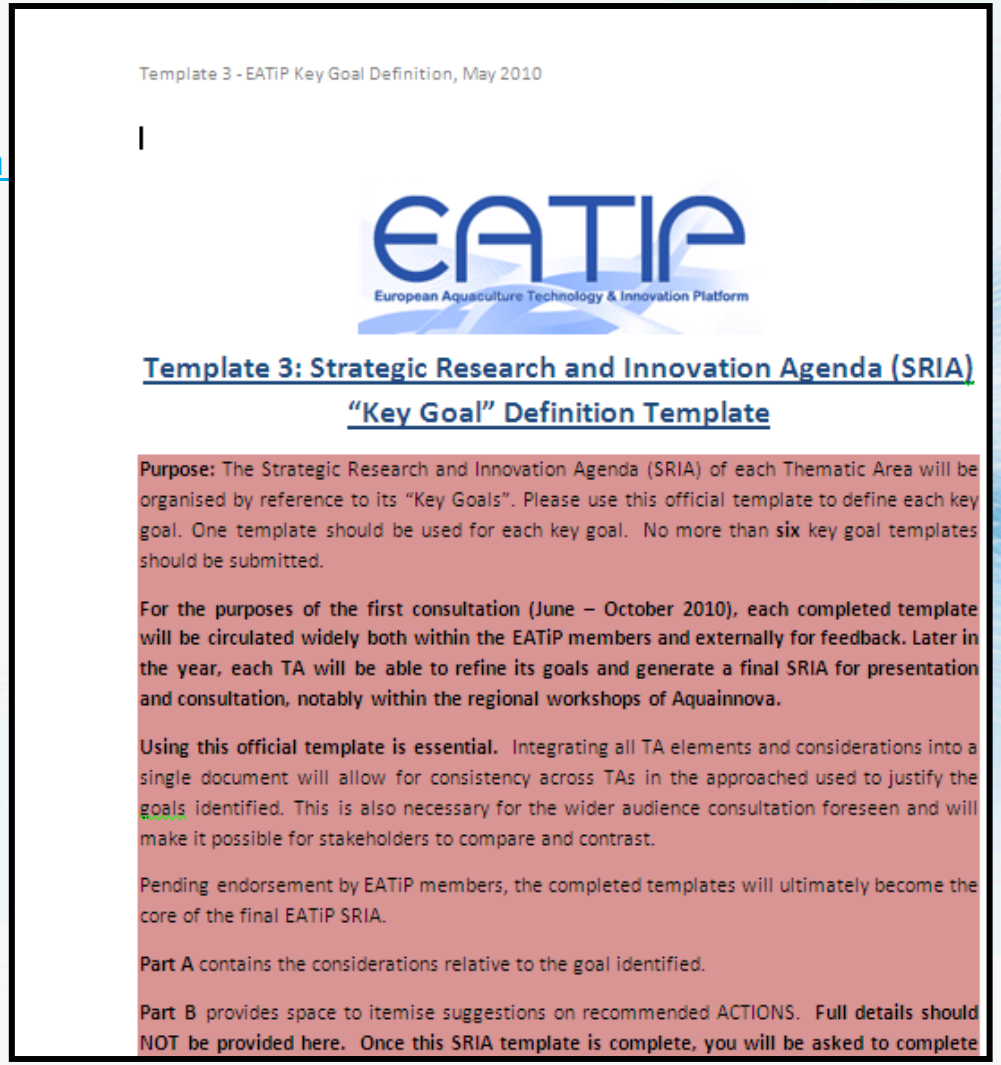
**2. Executive Summary**

The EATiP thematic area Technology & Systems will define research and innovation needs of the European aquaculture industry related to engineering technologies and systems. For the European aquaculture industry to be sustainable, economic viability must be assured. This is the most important condition for farmers to trust making infrastructure investments and undertake sustainable practices. Profitability can be improved by lowering the operating cost and increasing the productivity. Technology and systems will play a major role in this task going forward. This will also increase the global competitiveness of the industry. There are five working groups related to key technology areas; sea cage culture, inland culture, recirculation systems, molluscs culture and handling & processing.

It has been widely recognised that technological development will play a major role in future expansion of the industry and will be vital in breaching the gap between supply and demand for seafood products. For aquaculture to provide a high quality protein source and help to reduce negative impacts on wild fish stocks, new technologies and solutions should be developed to improve

# TA2 Dokumenter

- TA Visjon
  - ..\..\..\EATP\OC - TAs\TA2\TA 2 - Vision
- TA SRIA
  - TA2 - SRIA Key Goals 2010-11-30.doc



Template 3 - EATiP Key Goal Definition, May 2010

EATIP
European Aquaculture Technology & Innovation Platform

**Template 3: Strategic Research and Innovation Agenda (SRIA)**

**"Key Goal" Definition Template**

**Purpose:** The Strategic Research and Innovation Agenda (SRIA) of each Thematic Area will be organised by reference to its "Key Goals". Please use this official template to define each key goal. One template should be used for each key goal. No more than **six** key goal templates should be submitted.

**For the purposes of the first consultation (June – October 2010), each completed template will be circulated widely both within the EATiP members and externally for feedback. Later in the year, each TA will be able to refine its goals and generate a final SRIA for presentation and consultation, notably within the regional workshops of Aquainnova.**

**Using this official template is essential.** Integrating all TA elements and considerations into a single document will allow for consistency across TAs in the approached used to justify the goals identified. This is also necessary for the wider audience consultation foreseen and will make it possible for stakeholders to compare and contrast.

Pending endorsement by EATiP members, the completed templates will ultimately become the core of the final EATiP SRIA.

**Part A** contains the considerations relative to the goal identified.

**Part B** provides space to itemise suggestions on recommended ACTIONS. **Full details should NOT be provided here. Once this SRIA template is complete, you will be asked to complete**

# TA2 Dokumenter

European Aquaculture Technology and Innovation Platform

- TA Visjon
  - ..\..\..\EATIPOC - TA
- TA SRIA
  - ..\..\..\EATIPOC - TA
- TA2 Aksjonsplan
  - Copy of TA2 - Plan

SINTEF

A2

| | A | B |
|---|---|---|
| 1 | **Initial Goals Specification:** | |
| 2 | | |
| 3 | **G 1: Ensure an environmental sustainable industry by the application of new knowledge and technology innovations.** | |
| 4 | G1.1 | To develop escape-proof technologies for on-growing fish in farms subject to strong waves and currents |
| 5 | G1.2 | Developing technologies and protocols to minimise escapes for species with differing types of behaviour within on-growing cages |
| 6 | G1.3 | Reducing the intensity of impact may occur through focussing research on the best configuration of farms to enhance dispersion, elop echn es to ma se of ov ulture conditions for growth of fish |
| 7 | G | evelopment of newa gy so for gener n of ener n offshore fis ms |
| 8 | G1.5 | ed aqua re s ns |
| 9 | G1.6 | New s s for d aq ture |
| 10 | G | Produ of st g ma l |
| 11 | G1.8 | To reduce the amount and optimize the quality of the waste produced by the fish (RAS) |
| 12 | G1.9 | To improve the efficiency of waste removal in the system (RAS) |
| 13 | G1.10 | To reduce the discharge of waste to the outside environment (RAS) |
| 14 | | |
| 15 | **G 2: Meet the demand for fish in EU by the development of efficient technologies to support continued growth.** | |
| 16 | G2.1 | Development of farming equipment for more offshore sites |
| 17 | G2.2 | Development of operational protocols for more offshore sites |
| 18 | G2.3 | Development of protocols for site assessments |
| 19 | G2.4 | Development of equipment for efficient monitoring of oxygen levels |
| 20 | G2.5 | Integrated knowledge on fish biology and welfare in conjunction with new technology and farm management protocols |
| 21 | G2.6 | Bio-labelling of products from pond culture |
| 22 | G2.7 | Food safety and welfare (pond) |
| 23 | G2.8 | Product quality and processing (pond) |
| 24 | G2.9 | Prevent the contamination of shellfish with human pathogens by developing and enforcing improved waste water treatment and |
| 25 | G2.10 | Develop standardised detection and quantification methods for Norovirus |
| 26 | G2.11 | Reduce the incidence of diseases of shellfish |
| 27 | G2.12 | Control the contamination of molluscs by algal toxins |
| 28 | G2.13 | Improve existing production techniques |
| 29 | G2.14 | Develop new techniques for exposed and offshore areas |
| 30 | G2.15 | Develop better understanding of the interactions between shellfish cultivation, the natural environment and other coexisting |
| 31 | | |
| 32 | **G 3: Ensure the profitability of the aquaculture industry by developing improved operation, management systems and technology.** | |
| 33 | G3.1 | Technologies to provide better control of environmental variables and fish behaviour of the fish in the cages |
| 34 | G3.2 | Improved scientific understanding of biofouling |
| 35 | G3.3 | Improved technology for the monitoring and removal of biofouling |

Instructions | Initial Goals | Revised Main Goals | TA2 Goal 1 | TA2 Goal 2 | TA2 Goal 3 | TA2 Goal 4 | TA2

Ready

# Neste skritt

European Aquaculture
Technology and Innovation Platform

- Operativt konsil: Fra TA til EATIP
  - Visjon
  - SRIA
  - Aksjonsplan
- Intern konsultasjon blant medlemmene

# Hvorfor delta i EATIP

European Aquaculture
Technology and Innovation Platform

- EATIP provides ***a unique opportunity to develop the European aquaculture value-chain*** through RTDI through:
  - Multi-stakeholder debate and discussion
  - Identifying needs, opportunities and gaps
  - Developing a *Vision* for the future
  - Providing *Strategic Research and Innovation Agendas*
  - Providing *Implementation Plans*
  - Communicating its conclusions and proposals

# Hvordan delta i EATIP

- **Bli medlem!**
  - **Søknadsskjema på nett www.EATIP.eu**
  - **Forpliktelser, rettigheter**
- Kun medlemmer har stemmerett og kan delta i
  - TA
  - WG
  - SM

# Tidslinje

European Aquaculture
Technology and Innovation Platform

- Februar 2011: TA SRIA
- Februar – Mai: EATIP SRIA; intern konsultering
- Mai 2011: offentliggjøring; promosjon

European Aquaculture
Technology and Innovation Platform

# Takk for oppmerksomheten!

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SINTEF

Teknologi for et bedre samfunn